CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 :2005

T-2377

Job No.: CTCE/BBMP/KRIDL/W.No.14/CSR.11/670d/(QB)/2014-15 20.11.2014

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

* CUSTOMER	:	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
* AGENCY	:	**Technical Manager (West),** KRIDL, Bangalore.
* NAME OF WORK	:	Improvements to Vidia School Main Road (via 7th Main Havnoor Layout from Nandini Rice Corner circle) upto Hesaragatta Main Road in Ward No.14, Bagalagunte, BBMP, Bangalore.
REFERENCE	:	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 05.11.2014
SAMPLE ID	:	Bitumen
SAMPLE RECEIVED ON	:	05.11.2014
PERIOD OF TESTING	:	15.11.2014 to 20.11.2014

The results of the tests conducted on the Bitumen sample are as follows:

Sl.No	Description	Technical Reference	Test Result	Requirement as per IS: 73-2013
1	Penetration at 25^{0}C, 100g, 5 Sec 1/10 mm	IS: 1203-1978 (RA-2009)	86.0	80 to 100
2	Softening point, ^{0}C	IS: 1205-1978 (RA-2009)	49.0	Min. 40
3	Ductility at 27^{0}C, cm	IS: 1208-1978 (RA-2009)	100 >	Min. 75
4	Flash Point, ^{0}C	IS: 1209-1978 (RA-2009)	288	Min. 220

*Information is furnished by the Customer/Representative.

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VISHWANATH .C
Quality Manager

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Job No.: CTCE/BBMP/KRIDL/W.No.14/GSB-1/GR/2014-15 Date : 08.11.2014

GRADATION FOR GSB-I (CLOSE GRADED)
IS: 2720 (Part 4)

Customer : **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of work : Improvements to Widia School Main Road (via 7th Main Havnoor Layout from Nandini Rice Corner circle) upto Hesaragatta Main Road in Ward No.14, Bagalagunte, BBMP, Bangalore.

Reference : BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 05.11.2014

Date of Testing : 08.11.2014

Sample Source : GSB Mix Plant Bangalore. **Oven Dry Wt (gm) :** 25500

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Specified Limits
75.0	0	0	0.00	0	100
53.0	990	990	3.88	96.12	80-100
26.50	6225	7215	28.29	71.71	55-90
9.50	5435	12650	49.61	50.39	35-65
4.75	3780	16430	64.43	35.57	25-55
2.36	2860	19290	75.65	24.35	20-40
0.425	2535	21825	85.59	14.41	10-25
0.075	2415	24240	95.06	4.94	3-10
PAN	1260				
Total	25500				

Remarks: Satisfies MORTH Specifications as per Table 400-1, Grading I

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Job No.: CTCE/BBMP/KRIDL/W.No.14/WMM/Gradation/2014-15

13.11.2014

GRADATION FOR WMM
MORTH TABLE-400-11

Customer : **Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements to Widia School Main Road (via 7th Main Havnoor Layout from Nandini Rice Corner circle) upto Hesaragatta Main Road in Ward No.14, Bagalagunte, BBMP, Bangalore.

Reference : BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 05.11.2014

Date of Testing : 13.11.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **26300**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	990	990	3.8	96.2	95-100
22.4	6445	7435	28.3	71.7	60-80
11.2	5685	13120	49.9	50.1	40-60
4.75	4570	17690	67.3	32.7	25-40
2.36	3820	21510	81.8	18.2	15-30
0.600	2215	23725	90.2	9.8	8-22
0.075	2120	25845	98.3	1.7	0-8

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Job No.: CTCE/BBMP/KRIDL/W.No.14/BM/Bitumen/2014-15 24.11.2014

BITUMEN CONTENT DETERMINATION OF BITUMINOUS MACADAM MIX

As Per IRC:SP:11-1984

CUSTOMER	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager (West),** KRIDL, Bangalore.
NAME OF THE WORK	Improvements to Widia School Main Road (via 7th Main Havnoor Layout from Nandini Rice Corner circle) upto Hesaragatta Main Road in Ward No.14, Bagalagunte, BBMP, Bangalore.
REFERENCE	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 05.11.2014
SAMPLE I/D	Vidia School Main road Ward No.14, BBMP, Bangalore.
DATE OF TESTING	24.11.2014

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	482.5	482
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	17.5	18.00
7. Bitumen content in %	3.50	3.60
8. Average	3.55	

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Job No.: CTCE/BBMP/KRIDL/W.No.14/BM/Bitumen/2014-15 24.11.2014

GRADATION DETERMINATION OF BITUMINOUS MACADAM MIX

As Per IS2386 and IRC:SP:11-1984

CUSTOMER	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager (West),** KRIDL, Bangalore.
NAME OF THE WORK	Improvements to Widia School Main Road (via 7th Main Havnoor Layout from Nandini Rice Corner circle) upto Hesaragatta Main Road in Ward No.14, Bagalagunte, BBMP, Bangalore.
REFERENCE	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 05.11.2014
SAMPLE I/D	Vidia School Main road Ward No.14, BBMP, Bangalore.
DATE OF TESTING	24.11.2014

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-04 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
26.5	0	0	0	100	100
19	35.23	7.30	7.30	92.70	90-100
13.2	124.7	25.84	33.15	66.85	56-88
4.75	226.5	46.94	80.09	19.91	16-36
2.36	64.27	13.32	93.41	6.59	4-19
0.3	10.58	2.19	95.60	4.40	2-10
0.075	4.63	0.96	96.56	3.44	0-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-04 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
26.5	0	0	0	100	100
19	33.63	6.98	6.98	93.02	90-100
13.2	127.8	26.51	33.49	66.51	56-88
4.75	226.9	47.07	80.57	19.43	16-36
2.36	54.23	11.25	91.82	8.18	4-19
0.3	16.58	3.44	95.26	4.74	2-10
0.075	5.27	1.09	96.35	3.65	0-8

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Job No.: CTCE/BBMP/KRIDL/W.No.14/SDBC/Bit/2014-15 25.11.2014

BITUMEN CONTENT DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX AS PER IRC:SP:11-1984

CUSTOMER	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager (West),** KRIDL, Bangalore.
NAME OF THE WORK	Improvements to Widia School Main Road (via 7th Main Havnoor Layout from Nandini Rice Corner circle) upto Hesaragatta Main Road in Ward No.14, Bagalagunte, BBMP, Bangalore.
REFERENCE	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 05.11.2014
SAMPLE I/D	Vidia School Main road Ward No.14, BBMP, Bangalore.
DATE OF TESTING	25.11.2014

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	474.5	474.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	25.5	25.50
7. Bitumen content in %	5.10	5.10
8. Average	**5.10**	

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Job No.: CTCE/BBMP/KRIDL/W.No.14/SDBC/Bit/2014-15 25.11.2014

GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX AS PER IS2386 & IRC:SP:11-1984

CUSTOMER	**Asst. Executive Engineer,** T. Dasarahalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager (West),** KRIDL, Bangalore.
NAME OF THE WORK	Improvements to Widia School Main Road (via 7th Main Havnoor Layout from Nandini Rice Corner circle) upto Hesaragatta Main Road in Ward No.14, Bagalagunte, BBMP, Bangalore.
REFERENCE	BBMP/DZ/AEE/TDSD/PR/2014-15 Dated: 05.11.2014
SAMPLE I/D	Vidia School Main road Ward No.14, BBMP, Bangalore.
DATE OF TESTING	25.11.2014

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	36.15	7.62	7.62	92.38	90-100
4.75	258.4	54.46	62.08	37.92	35-51
2.36	55.47	11.69	73.77	26.23	24-39
1.18	45.36	9.56	83.33	16.67	15-30
0.3	25.64	5.40	88.73	11.27	9-19
0.075	31.25	6.59	95.32	4.68	3-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	37.85	7.98	7.98	92.02	90-100
4.75	249.6	52.60	60.58	39.42	35-51
2.36	57.23	12.06	72.64	27.36	24-39
1.18	41.52	8.75	81.39	18.61	15-30
0.3	32.56	6.86	88.25	11.75	9-19
0.075	27.54	5.80	94.06	5.94	3-8

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